Wind River® Pulsar Linux Quick Start For Avnet Zynq

Version 7.0

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Corporate Headquarters

Wind River
500 Wind River Way
Alameda, CA 94501-1153
U.S.A.

Toll free (U.S.A.): 800-545-WIND
Telephone: 510-748-4100
Facsimile: 510-749-2010

For additional contact information, see the Wind River Web site:
www.windriver.com

For information on how to contact Customer Support, see:
www.windriver.com/support

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1 Avnet Zynq Quick Start

1. Downloading the Certified Avnet Zynq Image
2. Loading the Certified Image onto a Memory Device
3. Booting Up the Avnet Zynq-Based SoM

Boot Wind River Pulsar Linux by powering up the Avnet Zynq-based System on a Module (SoM).

To apply power and also get a console connection, plug a micro USB cable in to your host system and the Avnet Zynq-based SoM. For console access, use a terminal emulator such as Minicom, Tera Term, or something similar.

Log in to the system by typing in **root** for the user name and **incendia** for the password.

After you log in to the system, check to see if there are updates available for install. Refer to the Wind River Pulsar Linux Getting Started: Updating the Device for details.

Sometimes it is desired to start over or revert to a good known baseline. With the Pulsar Linux application-ready platform, you can quickly revert back to the certified image. The topics covered in this guide can assist you with this. For details, start with the topic *Downloading the Certified Avnet Zynq Image* on page 1.

1.1 Downloading the Certified Avnet Zynq Image

Download the certified Wind River Pulsar Linux image for an Avnet Zynq-based System on a Module (SoM) from the Wind River downloads site.

Prerequisites

- You have established a connection to the Internet.
- You have a micro SD memory card.
- You have one of the following Avnet Zynq-based SoMs:
  - Avnet PicoZed
  - Avnet MicroZed
  - Avnet Mini-ITX

Refer to *Boards and Hardware Features Support* on page 5 for more information.

Step 1 Open a Web browser and navigate to the following URL: https://distro.windriver.com/public_feeds/WindRiver-Pulsar-Linux-Avnet-ZedBoard-image/

Step 2 Download the compressed image file **(*.img.zip**) specific to the Avnet Zynq-based SoM you are using.

Step 3 Extract (expand) the contents of the compressed image to a directory.

Postrequisites

After the image is downloaded, you can copy it to a micro SD memory card. Refer to *Loading the Certified Image onto a Memory Device* on page 2 for details.

1.2 Loading the Certified Image onto a Memory Device

Copy the Wind River Pulsar Linux certified image onto an micro SD memory card or a USB Flash drive.

Prerequisites

- You have established a connection to the Internet.
- You have a micro SD memory card.

Step 1 Insert the memory device into your host system.

Step 2 Determine the drive (Windows) or device node (Linux) that the memory device is mapped to on your host system.
On Linux, you can run the **dmesg** command. For demonstrative purposes, the device node **/dev/sdZ** is used throughout this procedure. Refer to the output of the **dmesg** command as your device node may be different.

Step 3 If your Linux host system automounted the memory card, detach its file system from the file hierarchy by running the **umount** command.
The following example detaches the **/media/userName/boot** file system from the file hierarchy:
$ umount /media/userName/boot

Step 4 Copy the certified image onto the memory device.
On Windows, you can use the **Win32 Disk Imager** application or something similar.
On Linux, you can use the **dd** command or something similar.
The following is an example of running the dd command on a Linux host system:
$ dd if=/path_to/pulsar7-certifiedDevice.img of=/dev/sdZ bs=1M

Step 5 Safely remove the memory device when the copy operation is completed.

Postrequisites

After the memory device is populated with the image, you can use it to boot your device up with Pulsar Linux. For details, refer to the boot-up instructions in the Wind River Pulsar Linux Quick Start document specific to the hardware device you are using.

1.3 Booting Up the Avnet Zynq-Based SoM

Boot up Pulsar Linux on an Avnet Zynq-based System on a Module (SoM).

The certified Pulsar Linux image for the Avnet Zynq-based SoM uses a USB cable connected between the SoM and a host computer to provide power to the board and an interface on the host computer to get access to the device's console.

Prerequisites

- You have one of the following Avnet Zynq-based SoMs:
  - Avnet PicoZed
  - Avnet MicroZed
  - Avnet Mini-ITX

  Refer to *Boards and Hardware Features Support* on page 5 for more information.
- You have prepared a micro SD memory card with the certified Wind River Pulsar Linux image for an Avnet Zynq-based SoM. For details, refer to *Loading the Certified Image onto a Memory Device* on page 2.
- You have a micro USB cable.
- You have an Ethernet cable.

Step 1 Configure the SoM to boot from the micro SD card by setting the boot mode DIP switches/jumpers properly.
The following is a reference table of the DIP switch/jumper settings for the different SoMs:

SoM	Micro SD Memory Card
Avnet PicoZed	SW1 (1-3) = HIGH (1-2) SW1 (4-6) = HIGH (4-5)
Avnet MicroZed	JP3 2-3 JP2 2-3 JP1 1-2
Avnet Mini-ITX	SW7.1 = OFF SW7.2 = OFF SW7.3 = ON SW7.4 = ON SW7.5 = OFF

Step 2 Establish a connection to the Internet by plugging an Ethernet cable in to the device's Ethernet port.

Step 3 Insert the prepared micro SD memory card into the micro SD card slot on the SoM.

Step 4 Start a terminal emulator on your host system.
For example, you can use Minicom on Linux or Tera Term on Windows.

Step 5 Apply power and get a console session with the SoM by plugging the micro USB cable in to your host system and the SoM.
The SoM starts loading the U-Boot boot loader when you connect the USB cable.

Step 6 When the device is booting up the firmware, stop the autoboot process by pressing any key before the timeout period ends.
The following is an example session of stopping the autoboot process:

…
…
…
In: serial
Out: serial
Err: serial
Net: Gem.e000b000
Hit any key to stop autoboot: 0
zynq-uboot> <INTERRUPT>
zynq-uboot>

Step 7 Boot up Pulsar Linux by performing one of the following procedures at the U-Boot prompt:

- To boot up manually, run these U-Boot commands:
  - **fatload mmc 0 0x3000000 uImage**
  - **fatload mmc 0 0x2A00000 dtb**
  - **setenv bootargs 'console=ttyPS0,115200 root=/dev/mmcblk0p3 \ rw rootfstype=btrfs softdog.nowayout=0 rootwait'**
  - **bootm 0x3000000 - 0x2a00000**
- To save the boot settings as the default, run these U-Boot commands:
  - **setenv sdboot "fatload mmc 0 0x3000000 uImage && fatload mmc 0 0x2A00000 dtb ; \ setenv bootargs 'console=ttyPS0,115200 root=/dev/mmcblk0p3 rw rootfstype=btrfs \ softdog.nowayout=0 rootwait' ; bootm 0x3000000 - 0x2a00000"**
  - **saveenv**

Step 8 Log in to the Pulsar Linux system by using **root** as the user name and **incendia** as the password.

2 Boards and Hardware Features Support

Wind River Pulsar Linux supports the listed boards and hardware features for the Avnet Zynq devices. For other device-specific information, refer to the device manufacturer's documentation.

2.1 Supported Zynq Boards

Board Name	Details
Avnet PicoZed	Processor — Zynq XC7Z030 Board revision - CPU board — Rev C - Base board — MBCC-PZCC-PCB-C Boot loader and version — U-Boot 2014.07
Avnet MicroZed	Processor — Zynq XC7Z010 Board revision — REV F01 Boot loader and version — U-Boot 2013.01-dirty
Avnet Mini-ITX	Processor — Zynq XC7Z045 Board revision - CPU board — Rev C - Base board — Mini-ITX-7Z-PCB-E Boot loader and version — U-Boot 2014.01-dirty

2.2 Supported Hardware Features

Component	Device
Bus	I2C — On-chip I2C controller QSPI — On-chip Quad-SPI flash controller SPI — On-chip SPI controller PCIe — On-Chip PCIe controller (for the Avnet Mini-ITX board)
Network	GEM — On-chip Gigabit Ethernet controller PHY - For the Avnet Mini-ITX board — 88e1510 - For the Avnet MicroZed and PicoZed boards —88E1512
Storage	QSPI NOR Flash - For the Avnet Mini-ITX board — Spansion s25FL129P1 with a capacity of 256 MB - For the Avnet MicroZed and PicoZed boards — Spansion S25FL128S with a capacity of 128 MB SD/MMC — On-chip SD peripheral controller
USB	USB Host — On-chip USB 2.0 EHCI host controller
Multimedia	Audio — - For the Avnet Mini-ITX board — HDMI codec - For the Avnet Mini-ITX board — ADAU1761 codec
Miscellaneous devices	GPIO — On-chip general purpose I/O peripheral RTC - For the Avnet Mini-ITX board — DS1337 SWDT — On-chip system watchdog timer XADC — On-chip analog-to-digital converter HDMI - For the Avnet Mini-ITX board — ADV7511 HDMI transmitter UART — On-chip UART

2.3 Unsupported Hardware Features

Component	Device
Miscellaneous devices	Devices fanned out from PL other than some listed in the **Supported Hardware Features** table in this topic
Multimedia	DRM UIO — Mostly fanned out from PL

3 Documentation

Understanding the full range of documentation available is invaluable to helping you find the information you need to work effectively with Wind River Pulsar Linux.

All Pulsar Linux documentation is available in the Wind River Knowledge Library at the following URL:

https://knowledge.windriver.com/?cid=pulsar_lx

The following table lists the available manuals and their descriptions:

3.1 Documents

Document Name	Description
Wind River Pulsar Linux Release Notes	Release information for Pulsar Linux.
Wind River Pulsar Linux Quick Start for certifiedDevice	Information on how to quickly boot up your device with Pulsar Linux. A quick start document is available for each certified hardware device.
Wind River Pulsar Linux Getting Started	Information on common system administration tasks for the Pulsar Linux system.
Wind River Pulsar Linux Software Development Guide	Information on how to develop software on the Pulsar Linux system.
Wind River Pulsar Linux System Integration Guide	Information on how to rebuild the Pulsar Linux image for the various certified devices.